

## General

### Title

Diagnostic imaging: percentage of CT exams with contrast performed that resulted in extravasation.

### Source(s)

American College of Radiology (ACR). National Radiology Data Registry: qualified clinical data registry. Non-PQRS measures. Reston (VA): American College of Radiology (ACR); 2015 Mar. 49 p.

## Measure Domain

### Primary Measure Domain

Clinical Quality Measures: Outcome

### Secondary Measure Domain

Does not apply to this measure

## Brief Abstract

### Description

This measure is used to assess the percentage of computed tomography (CT) exams with contrast performed that resulted in extravasation.

Measure calculated at facility/group level (National Provider Identifier [NPI]/Taxpayer Identification Number [TIN]) with rate assigned to all physicians within the facility/group who interpret CTs.

### Rationale

Intravenous (IV) contrast enhanced computed tomography (CT) may be associated with significant morbidity. The reported incidence of IV contrast media extravasation related to power injection for CT has ranged from 0.1% to 0.9% (1/1,000 patients to 1/106 patients) (American College of Radiology, 2013). While the incidence of moderate or severe extravasation is lower, significant morbidity can result in these cases. Extravasation typically results in a combination of immediate pain, erythema, and swelling, but most extravasation reactions are limited to the immediately adjacent soft tissues (typically the skin and subcutaneous tissues) and are mild; long-term major morbidity is rare. However, severe skin and

subcutaneous ulceration can occur, or compartment syndrome may result (neurovascular signs and symptoms due to increased volume in the confined spaces formed by the deep fascia).

The comparative feedback on this measure (which is part of a broader practice quality improvement project) provides radiologists with a means to analyze and improve performance of the procedure and avoid this adverse event. A high extravasation rate may indicate that patients received less than optimal care.

The measure is calculated at the level of facility/group because contrast is typically administered by nonphysician staff but performance improvement and treatment of adverse effects are driven by policies instituted by the physicians as a team.

## Evidence for Rationale

ACR Committee on Drugs and Contrast Media. ACR manual on contrast media [version 9]. Reston (VA): American College of Radiology; 2013. 128 p.

American College of Radiology (ACR). National Radiology Data Registry: qualified clinical data registry. Non-PQRS measures. Reston (VA): American College of Radiology (ACR); 2015 Mar. 49 p.

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Wang CL, Cohan RH, Ellis JH, Adusumilli S, Dunnick NR. Frequency, management, and outcome of extravasation of nonionic iodinated contrast medium in 69,657 intravenous injections. Radiology. 2007 Apr;243(1):80-7. [PubMed](#)

## Primary Health Components

Computed tomography (CT); intravenous (IV) iodinated contrast; extravasation

## Denominator Description

Total number of computed tomography (CT) exams using intravenous iodinated contrast

## Numerator Description

Total number of computed tomography (CT) exams using intravenous iodinated contrast resulting in extravasation

## Evidence Supporting the Measure

### Type of Evidence Supporting the Criterion of Quality for the Measure

A clinical practice guideline or other peer-reviewed synthesis of the clinical research evidence

A formal consensus procedure, involving experts in relevant clinical, methodological, public health and organizational sciences

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

### Additional Information Supporting Need for the Measure

## Extent of Measure Testing

The measures in this set are being made available without any prior formal testing. However, these measures are included in the Centers for Medicare and Medicaid Services (CMS) approved American College of Radiology (ACR) National Radiology Data Registry, a CMS Physician Quality Reporting System (PQRS) Qualified Clinical Data Registry since 2014.

The ACR recognizes the importance of thorough testing all of its measures and encourages ongoing robust testing of the ACR National Radiology Data Registry measurement set for feasibility and reliability by organizations or individuals positioned to do so. The ACR will welcome the opportunity to promote such testing of these measures and to ensure that any results available from testing are used to refine the measures on an ongoing basis. Since these measures are in use for quality improvement and reporting, we can support data analysis of registry data to perform the testing, such as evaluation of gaps for validity testing, and signal-to-noise estimation for reliability testing.

## Evidence for Extent of Measure Testing

Blakey A. (Administrator, Quality Management Programs, American College of Radiology, Reston, VA). Personal communication. 2016 Mar 7. 1 p.

## State of Use of the Measure

### State of Use

Current routine use

### Current Use

not defined yet

## Application of the Measure in its Current Use

### Measurement Setting

Ambulatory/Office-based Care

Ambulatory Procedure/Imaging Center

Hospital Inpatient

Hospital Outpatient

### Professionals Involved in Delivery of Health Services

not defined yet

## Least Aggregated Level of Services Delivery Addressed

Clinical Practice or Public Health Sites

## Statement of Acceptable Minimum Sample Size

Unspecified

## Target Population Age

Unspecified

## Target Population Gender

Either male or female

## National Strategy for Quality Improvement in Health Care

### National Quality Strategy Aim

Better Care

### National Quality Strategy Priority

Health and Well-being of Communities

Prevention and Treatment of Leading Causes of Mortality

## Institute of Medicine (IOM) National Health Care Quality Report Categories

### IOM Care Need

Getting Better

Living with Illness

Staying Healthy

### IOM Domain

Effectiveness

## Data Collection for the Measure

### Case Finding Period

Unspecified

## Denominator Sampling Frame

Patients associated with provider

## Denominator (Index) Event or Characteristic

Diagnostic Evaluation

## Denominator Time Window

not defined yet

## Denominator Inclusions/Exclusions

Inclusions

Total number of computed tomography (CT) exams using intravenous iodinated contrast

Exclusions

None

## Exclusions/Exceptions

not defined yet

## Numerator Inclusions/Exclusions

Inclusions

Total number of computed tomography (CT) exams using intravenous iodinated contrast resulting in extravasation

Exclusions

Unspecified

## Numerator Search Strategy

Fixed time period or point in time

## Data Source

Registry data

## Type of Health State

Adverse Health State

## Instruments Used and/or Associated with the Measure

Unspecified

## Computation of the Measure

### Measure Specifies Disaggregation

Does not apply to this measure

### Scoring

Rate/Proportion

### Interpretation of Score

Desired value is a lower score

### Allowance for Patient or Population Factors

not defined yet

### Standard of Comparison

not defined yet

## Identifying Information

### Original Title

CT IV contrast extravasation rate (low osmolar contrast media).

### Measure Collection Name

National Radiology Data Registry Measurement Set

### Submitter

American College of Radiology - Medical Specialty Society

### Developer

American College of Radiology - Medical Specialty Society

### Funding Source(s)

None

## Composition of the Group that Developed the Measure

The American College of Radiology (ACR) National Radiology Data Registry (NRDR) helps facilities benchmark outcomes and process-of-care measures and to develop quality improvement programs. The composition of the workgroup is has representation from each of our six data registries:

- CT Colonography Registry Committee (CTC)
- Dose Index Registry Committee (DIR)
- General Radiology Improvement Database Committee (GRID)
- National Mammography Database Committee (NMD)
- Lung Cancer Screening Registry Committee (LCSR)
- IR & INR Registries (Interventional Radiology)

### Committee Members

- Morin Richard, PhD, FACR, Chair of NRDR
- Kalpana Kanal, PhD, Chair of DIR
- Zuley Margarita, MD, Chair of NMD
- Abe Dachman, MD, Chair of CTC Committee
- Frank Rybicki, MD, Chair of Metrics Committee
- Siegel Eliot, MD, RSNA Liaison
- Chad Calendine, MD, Co-Chair of GRID
- Geoffrey Wiot, Co-Chair of GRID
- Jeremy Durack, Chair of IR Registry Committee
- Ella Kazerooni, Co-Chair of Lung-Cancer Screening Committee
- Deni Aberle, Co-Chair of Lung-Cancer Screening Committee

### Committee Staff

- Judy Burleson, MHSA, American College of Radiology
- Mythreyi Bhargavan Chatfield, PhD, American College of Radiology

## Financial Disclosures/Other Potential Conflicts of Interest

Unspecified

## Adaptation

This measure was not adapted from another source.

## Date of Most Current Version in NQMC

2015 Mar

## Measure Maintenance

This measure is reviewed annually

## Date of Next Anticipated Revision

2017 Mar



## Measure Status

This is the current release of the measure.

## Measure Availability

Source available from the [American College of Radiology \(ACR\) Web site](#) .

For more information, contact ACR at 1891 Preston White Drive, Reston, VA 20191; Phone: 703-648-8900; E-mail: [nrdcr@acr.org](mailto:nrdcr@acr.org); Web site: [www.acr.org](http://www.acr.org) .

## NQMC Status

This NQMC measure summary was completed by ECRI Institute on December 11, 2015. The information was verified by the measure developer on March 7, 2016.

## Copyright Statement

This NQMC summary is based on the original measure, which is subject to the measure developer's copyright restrictions.

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## Production

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## Disclaimer

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